This stimulated the desire by study of the theoretical heat problem to render useful the large quantity of heat stored in the molten pig iron from the blast furnace, and which is lost in ordinary methods of working.

The first result was knowledge of the differences in energy change, which took place by the reactions between iron ore and the reducing agents in molten pig iron, and it was concluded therefrom that the elimination of substances, the reactions of which were exothermic, might in no wise lay claims on the heat liberation of the furnace, that the heat thereby set free must be previously usable by contributing to assistance of the endothermic carbon reaction.

Further, since generally two substances react with greater intensity the more concentrated their solutions, it was to be expected that with the object of successful elimination of the carbon it was not necessary to dilute the carbon content of the metal down to approximately 1 per cent, as Talbot did, whose process was at that time known.

The correctness of the above conjectures was confirmed in the main by experiments, in which first solid pig iron without scrap and without other additions were melted down in the open-hearth furnace itself, and thereafter refined by means of additions of ore, and then there were also made charges of molten pig iron direct from the blast furnace, and thereby the heat saved employed in melting down solid pig iron. Immediately from the beginning the process yielded favourable results.

In its further development, stress was placed on utilising as much as possible all materials used for the charge, and thus economising with the utmost care the iron content of the ore requisite. It proved that it was by no means necessary to remove the highly ferruginous slags originated at the commencement of the process. On the contrary, the knowledge was more and more established that the slag is nothing more than the sol rait Jorthe requisite chemically combined oxygen, and that a large quantity of slag by no means exercises the harmful action which was manifestly almost always attributed to it. An ample quantity of slag proved itself rather useful, if it were not quite inordinately large.